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Foreign Professionals and Domestic Regulation

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Abstract

Changes in demographics and patterns of investment in human capital are creating increased scope for international trade in professional services. The scope for mutually beneficial trade is, however, inhibited not only by quotas and discriminatory taxation, but also by domestic regulation—including a range of qualification and licensing requirements and procedures. To illustrate the nature and implications of these regulatory impediments, this paper presents a detailed description of the regulatory requirements faced in the United States market by four types of Indian professionals: doctors, engineers, architects, and accountants. India is one of the largest exporters of skilled services, and the United States is one of the largest importers of skilled services, so these two countries reflect broader global trends. The paper argues that regulatory discrimination, for example through preferential recognition agreements, has implications both for the pattern of trade and for welfare. It presents some illustrative estimates that suggest the economic cost of regulations may be substantial. The paper concludes by examining how the trade-inhibiting impact of regulatory requirements could be addressed through bilateral and multilateral negotiations.

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FOREIGN PROFESSIONALS AND DOMESTIC REGULATION

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FOREIGN PROFESSIONALS AND DOMESTIC REGULATION

I. EMERGING GLOBAL MARKET FOR PROFESSIONALS: THE BROADER TRENDS

Changes in demographics and patterns of investment in human capital are creating considerable scope for international trade in professional services. As populations in rich countries age, developing countries are seeing an increase in the proportion of working-age people. At the same time, the richest countries are investing proportionally less than middle-income countries in engineering and technical human capital (Sequeira, 2003). These changes in endowments are creating shifts in comparative advantage that are reversing conventional views on "who can sell what to whom". India, one of the largest exporters of skilled services, and the United States, the largest importer of skilled services, are two countries that mirror these broader global trends.

The potential for mutually beneficial trade in professional services is huge, but in practice such trade faces a number of policy impediments in both developed and developing countries. Developments in information and communication technologies have rendered some restrictions redundant, but the dominant modes of delivery, commercial presence and the presence of natural persons, are still subject to numerous restrictions. In particular, the movement of professionals across countries, which is the subject of this paper, faces two broad types of impediments (see Table 1): *quotas and fiscal discrimination*, in the form of restrictive visa regimes, prohibitions and economic needs tests on foreign providers, as well as discriminatory treatment in taxes and government procurement; and *domestic regulations* such as licensing and qualification requirements and procedures, that apply in principle to both domestic and foreign providers, but could be seen as trade impediments when imposed on foreign service providers who have already fulfilled these requirements in another jurisdiction.[1]

Table 1: Impediments to the Presence of Foreign Professional Service Providers

Barriers to Trade in Professional Services	
Quotas and fiscal discrimination	**Domestic Regulation**
Restrictive visa regime	Licensing requirements and procedures
Quotas on foreign providers	Qualification requirements and procedures
Discriminatory taxes and procurement	Other technical regulations

Previous work, including policy papers prepared by the World Bank (2004), has focused on quotas and fiscal discrimination. This paper focuses on domestic regulation. As a first step in this analysis, we identify the regulatory requirements and procedures that foreign doctors, engineers, architects and accountants have to meet in order to practice in a particular market. Purely as an

[1] In terms of the rules of the General Agreement on Trade in Services, quotas fall within the scope of Article XVI on market access while discriminatory taxation falls within the scope of Article XVII on national treatment. Domestic regulations such as licensing and qualification requirements and procedures fall within the scope of Article VI on domestic regulation, but could also fall within the scope of Article XVII if they discriminate in any way against foreign services providers.

example, we consider professionals from India who wish to practice in the United States. We recognize that the regulatory requirements in most other countries are similar if not more burdensome, and that many of the requirements imposed on foreign professionals by a particular US state are also imposed on professionals from other US states. Furthermore, current trade and immigration policies imply that what may initially be "trade in services" through the temporary presence of professionals often ends up as permanent migration. Hence, it is difficult to distinguish between the two forms of foreign presence when we describe regulatory regimes or present data on foreign presence.

The issue of international movement of professionals, while important from a policy perspective, has not provoked much empirical research.[2] Thus there is not a well-established methodology and little information and data to fall back upon. Much of the work in this paper is based on primary data. However, both the data and the estimates must at this stage be seen as a work in progress.

The structure of the paper is as follows. Section II provides a brief overview of the extent of foreign and Indian professional presence in the US as well as an indication of educational capacity in India. Section III summarizes the regulatory requirements that Indian professionals face in the US market, with a detailed description provided in Annex I. Section IV discusses the implications of regulatory discrimination and the economic cost of regulations. Section V examines how regulatory impediments to the export of professional services can be addressed through bilateral and multilateral avenues. Section VI discusses the priorities for international negotiations and domestic reform.

II. INDIAN PROFESSIONALS IN THE UNITED STATES AND INDIAN EDUCATIONAL CAPACITY

A discussion on "trade" in services would ideally focus on foreign professionals working temporarily in the United States – reflecting the fact that multilateral and regional trade agreements treat trade-related labor mobility as distinct from immigration. There is, unfortunately, no data on the number of foreign professionals in the United States on temporary stay visas, but from the US census data it is possible to calculate the number of "foreign born" professionals.[3] We use this latter data to illustrate the significant presence of foreign professionals.

Foreign professionals in the five services considered here, namely, accountants and auditors, architects, engineers, physicians and surgeons, and lawyers, made up 17 percent of the total professionals of the US economy—which is smaller than the share of foreign goods and foreign capital in the US economy, but higher than the share of foreign professionals in most other countries. In absolute numbers, these five professions accounted for nearly 5.1 million jobs in 2000, of which, nearly 4.24 million were held by US-born professionals and the remaining 0.86 million by foreign-born professionals (many of whom have subsequently become US citizens).

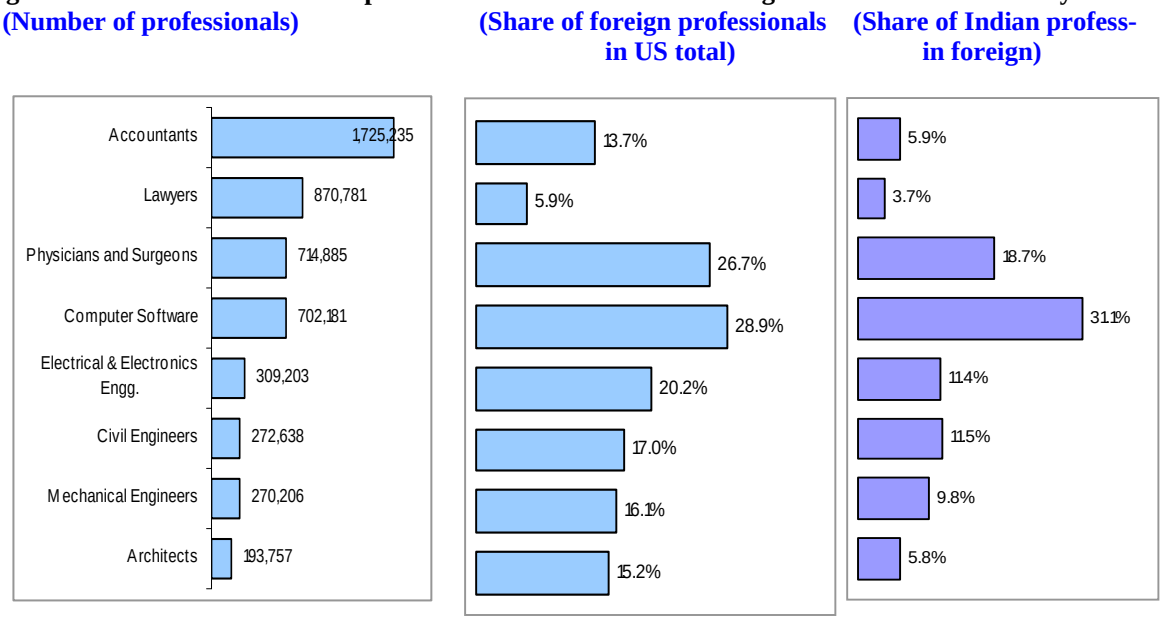
The share of foreign professionals varies considerably across different professions, with professions that are less regulated and more intensive in science and technology-subjects tending to have a larger foreign presence (Figure 1a). Foreign presence is the highest in the field of computer software and medicine, with foreign computer software engineers and physicians and surgeons accounting for 29 and 27 percent of the total workforce in their respective fields. At the other extreme is the legal profession, where foreign-born lawyers account for only 6 percent of the total workforce.

[2] One exception is the excellent working paper by Ganguly (2005) which covers ground similar to that in Section III of this paper.

[3] Data is available on the number of individuals entering the United States on specialty occupation (H1B) visas, but this data records the number of entries so that an individual may be counted more than once depending on the number of times he or she leaves and returns to the United States.

Asians make up nearly half of all the foreign professionals in the US, with India being the largest supplier of professionals to the US. In 2000, of the 864,000 foreign professionals working in the US, as many as 472,000 (i.e. 54 percent of all foreign professionals) were born in Asia. India is the largest supplier of skilled professionals to the US. In 2000, nearly 133,000 Indian-born professionals were working in the US in these five professions, implying that one of every 50 professionals in the US was an Indian. But there was considerable variation across professions with three of every four Indian professionals working either as a computer software engineer or a physician or surgeon. On the other hand, only 3.7 percent of foreign-born lawyers, 5.8 percent of the foreign-born architects and 5.9 percent of foreign accountants and auditors were Indian.

Figure 1a: The number of skilled professionals and the share of foreign-born in the US economy



Source: US Census, 2001.

India's educated manpower is not only large, it is also growing rapidly (Figure 1b). In 1999/00, though only 5.9 percent Indians had graduate degrees or above, this translated into 21.4 million graduate workers. The number of highly educated Indian workers is likely to have increased steeply since then, as enrolment in the higher education system has been rapidly rising since the 1990s. By 2005/06, an estimated 10.5 million students were enrolled in institutions of higher learning. India now has the third largest population enrolled in the higher education system in the world, after the United States and China. The number of professional education institutions has also grown rapidly (Figure 1c). Data on total enrollment in professional educational institutions is not generally available, but according to the All India Council of Technical Education, India produced 464,743 engineers in 2004-05, an increase of 16 percent over 2003-04 and more than double the number of engineers produced by the United Sates and Europe combined.

Figure 1b: Growth of Higher Education Institutions and Enrolment in India

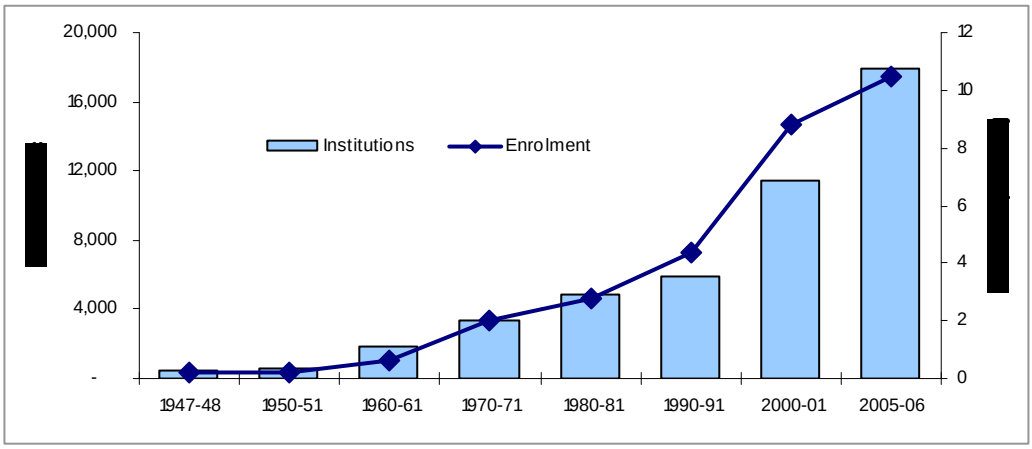
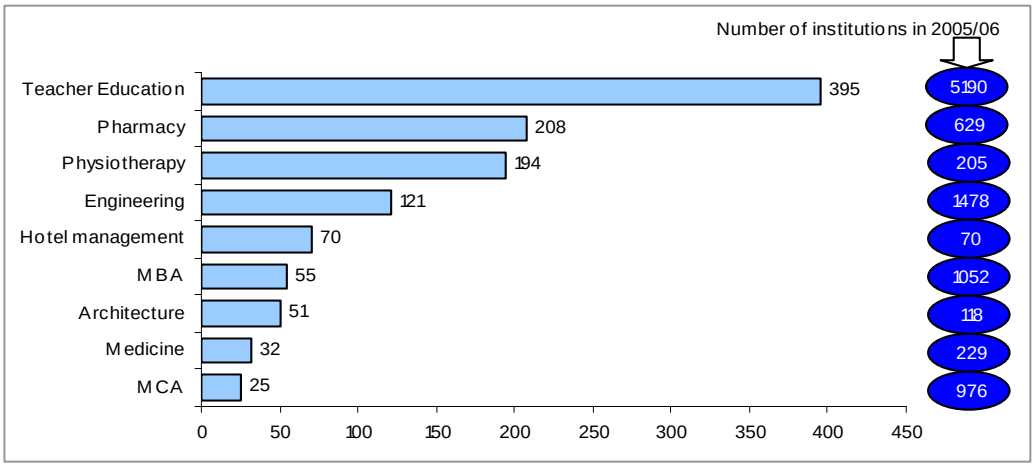


Figure 1c: Number and growth of professional education institutions in India between 1999/00 & 2005/06



Source: Agarwal, 2006

Notwithstanding the fact that India is endowed with a large and growing base for skilled professionals, there are serious concerns about the uneven quality of its endowment. According to McKinsey (2005), only 25 percent of Indian engineers, 15 percent of its finance and accounting professionals and 10 percent of Indian professionals with general degrees are suitable to work for multinational companies[4]. In fact, faced with shortages of relevant skills, even Indian firms are beginning to recruit abroad.[5] Interviews with Indian professionals working in the US and with human resource managers in Indian companies confirm the heterogeneity in the quality of education and sporadic shortage of professionals with certain skills. There is also broad consensus on the urgent need for reform of higher education in India.[6]

[4] This is largely attributed to poor pedagogy, outdated curricula, inadequate interaction between universities and industry, as well as restrictions on the entry of private domestic and foreign education service providers.

[5] For example, see Economic Times (June 15, 2006) and Financial Times (June 17, 2006), Christian Science Monitor (May, 2006).

[6] See Kaul (2006) and Aggarwal (2006).

III. REGULATIONS FOR FOREIGN PROFESSIONALS IN THE US

A consequence of the federal structure of the US government is that professional licensing is generally not at the national level but the responsibility of state boards. These boards are specifically formed by the respective state governments for the purpose of regulating different professions. Thus there are State Medical Boards, state Boards of Architecture, State Engineering Boards, and State Accounting Boards. In most cases, these Boards are autonomous bodies and possess wide discretion in matters regarding the eligibility to practice professions. These boards establish the rules for licensure in each profession[7].

The application for licensure to practice a profession must be made to the respective state boards. Then the steps listed below need to be taken – not always clear cut, sometimes fragmented into smaller sub-steps and not always in the same sequence. A detailed profession-by-profession description is presented in Annex I.

- The verification of educational qualifications, training and experience to establish eligibility to take the professional examination. Since no Indian program is accredited, this is a requirement that has to be fulfilled in all professions. The process is not expensive but is reported in certain areas to be of unpredictable duration and not transparent.

- The remedying of any gaps in education, training and experience before taking (all or part of) the professional examination, and the remedial steps need to be taken in large part in the United States. Doctors take initial examinations held in India followed by a clinical skills examination in the United States, and then a period of mandatory graduate medical education in the United States (irrespective of past education and experience, and, in some states for a longer period than graduates of US institutions), and then qualify for a final examination in the United States. Most Indian architects and engineers in certain fields (including civil and mechanical) choose to pursue a masters degree in the United States, and must then (in certain fields) acquire several years of local experience which makes them eligible to take a professional examination. The experience requirements for graduates of non-accredited institutions are in some states significantly longer than those for graduates of accredited institutions.

- Passing the professional examination(s), held entirely or in significant part in the United States.

- In each of the regulated professions the final examination must be taken in the United States. In order to take the examination, a candidate needs to obtain a visa and incur the costs of examinations.

- The fulfillment of additional requirements, such as experience or local residency, in order to obtain a professional license. In medicine, a foreign medical graduate on a J1 visa must go through 3 years of work in an underserved area in order to be able to work in the United States. In accountancy, several US states require accountants to be residents in order to be licensed (this not only discriminates against foreign professionals but also against out-of-state domestic professionals).

[7] However it is important to note that since these state-level licensing boards in the US operate under delegated authority of state governments and since their licensing conduct involves measures affecting trade in services that are covered by trade agreements (except those that specifically carve out sub-national measures as some recent US FTAs have done), these boards do not enjoy have complete administrative discretion under WTO law.

Licensure rules differ not only across professions but across states. Each state has its own requirements for those who have qualified from the state, from other states of the United States and from a foreign country. For example California requires four years of experience for licensure if an engineer is educated from a non-accredited program, whereas Pennsylvania requires a minimum of 12 years of experience. Similarly, international medical graduates (IMGs) are required to complete 3 years of postgraduate training in states such as Alaska, Colorado, Delaware, Washington DC and Missouri whereas the requirement is only 2 years of post graduate training in states such as California, Florida and Illinois. Architecture is an exception in that it has a centralized and strong national body, the National Council for Architectural Registration Boards (NCARB), which works with State Boards to establish qualification, registration and licensing policies.

IV. IMPLICATIONS OF REGULATORY DISCRIMINATION IN PROFESSIONAL SERVICES

The analysis of discriminatory treatment in professional services differs from conventional trade analysis because of how services are traded and how services trade is regulated. First, since professional services trade often requires proximity between the supplier and the consumer, we need to consider the impact of discrimination not just on services supplied cross-border, but also on the entry into the market of foreign individuals and foreign firms. Secondly, while some forms of discriminatory treatment, like taxes on foreign short-term consultants, are like tariffs in their effect, others such as burdensome licensing and qualification requirements are not. The latter are different because they affect fixed costs of entry (rather than variable costs of service provision) and because they inflict costs on foreigners in some cases without generating rents (as tariffs do).

The implications of discriminatory treatment for the pattern of trade are straightforward. Compared to a non-discriminatory regime, in any market we expect to observe a relatively higher share of services and service providers from jurisdictions that are exempted from burdensome qualification and licensing requirements. For example, the United States' decision, as part of its agreement with Canada, to exempt only chartered accountants trained in Canada from the requirement to duplicate all steps in the licensing process, can be expected to lead to an increase in the proportion of Canadian accountants practicing in the US.

The implications for policy are also fairly simple. When a country like the United States maintains certain regulations that impose a cost on foreign providers without generating any benefit (such as improved quality or revenue for the government or other domestic entities), then welfare is likely to be enhanced by eliminating such regulations even on a preferential basis.[8] Thus, the mutual recognition agreements which the US has concluded with some other countries in accountancy and engineering, or the lighter regulatory burden placed by some US states on other states, unambiguously enhance US welfare.

Preferential liberalization does not, however, maximize the potential gains to the US. First of all, the presumption that the US (or a particularly US state) will benefit from a preferential liberalization initiative is greater if agreements are not exclusionary – i.e. they do not apply restrictive rules of origin.[9] That is, if the US grants recognition to South Africa in engineering, then an individual

[8] Note that the benefits of preferential liberalization involving tariffs are ambiguous because the gains to consumers from cheaper imports may be offset by the loss in tariff revenue. But if a regulation was generating no revenue, then there is no revenue to lose and only the benefits of cheaper imports remain.

[9] The "rules of origin" currently applied in professional services trade depend on the mode of supply. With regard to the presence of natural persons, they typically relate to the nationality of the professional or to the jurisdiction in which the professional was licensed or qualified. With regard to commercial presence, they relate

from any other country who has qualified in South Africa must also benefit regardless of nationality. Just as in goods trade, a liberal rule of origin enables providers form other countries also to take advantage of preferential liberalization. The greatest benefits arise, however, from the elimination of unnecessary regulatory requirements for providers from all countries. Thus, US recognition agreements should cover all countries with regulations that ensure their providers meet US requirements. For example, if it can be established that India has basically the same educational and training system for engineers as South Africa, then it should also be made party to mutual recognition agreements that include South Africa, such as the Washington Accord.[10] The benefits to the US come from both increased competition and greater diversity of services.

It is possible to illustrate the impact of differential requirements on foreigners at the state level in the United States thanks to the availability of detailed US census data (which, as noted above, captures permanent rather than temporary presence of foreign providers). Econometric tests show the following (see Table 2): (a) First of all, state-specific variables, like per capita income and size of the population have a significant positive influence on a foreign professionals' choice with regard to place or state of work, while the state's geographic location (whether on the coast or on the border) seems to have an influence only on engineers;[11] and (b) Secondly, after controlling for the above variables, regulations governing the recognition of professional qualifications, training and experience and the licensing requirements at the state-level are found to have a significant affect on foreign presence in the state; states with a more stringent regulatory environment have a smaller share of foreign professionals in the total number of professionals than states with more liberal regulatory environment (shown in bold letters in Table 2).

In the case of accountants and auditors, we find that states which require in-state experience while applying for a Certified Public Accountants (CPA) license are likely to have 5.7 percent fewer foreign professionals than states that do not impose such a requirement (see the coefficient for variable R3 in Column 1, Table 2). The states that impose restrictions on in-state residency and experience for license and CPA certified experience are likely to have 9 percent fewer foreign professionals than states that do not impose any of those restrictions (sum of the coefficients for variable R3 and R1 in Column 1, Table 2). In case of physicians and surgeons, states that require foreign graduates to spend more years in residency program than natives to take the final professional examination, do not recognize Graduate Medical Examination (GME) completed in foreign countries (other than Canada) for credit towards license, and do not grant licenses to foreign eminent physicians, are likely to have 5 percent fewer foreign doctors than states that do not impose these restrictions (sum of coefficient for variable R1, R2 and R3 in Column 2, Table 2). Unlike accountants and doctors, the impact of state-level regulations is found to be ambiguous in case of engineers. On the one hand, states that require additional experience to appear in the professional engineering (PE) examination for foreign professionals (with a degree that is not accredited by the Accreditation Board for Engineering and Technology, ABET), are found to have lower foreign presence relative to states that do not impose

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to who owns and/or controls the parent firm or to where the parent firm is incorporated and conducts "substantial business operations."

[10] The Washington Accord, signed in 1989, is an international agreement among bodies responsible for accrediting engineering degree programs. It recognizes the substantial equivalency of programs accredited by those bodies and recommends that graduates of programs accredited by any of the signatory bodies be recognized by the other bodies as having met the academic requirements for entry to the practice of engineering. Signatories are the relevant bodies from Australia, Canada, Chinese Taipei, Hong Kong China, Ireland, Japan, Korea, New Zealand, Singapore, South Africa, United Kingdom and the United States. Bodies from Germany, India, Malaysia, Russia and Sri Lanka hold provisional membership status as they have been identified as having qualification accreditation or recognition procedures that are *potentially* suitable for the purposes of the Accord.

[11] We see no evidence that foreign-born professionals tend to locate in regions where domestic professionals are reluctant to locate, e.g. away from the coast.

such restrictions; on the other hand, in-state residency requirements is found to be positively associated with foreign presence (the coefficient for variable R1 is positive, while R3 is negative in Column 3, Table 2).

Table 2: Regression Results

Dependent Variable: Ratio of Foreign to Total Professionals in the US
Observations: 51 (50 US States + District of Columbia)
Method: Weighted Least Squares (with white heteroskedasticity-consistent standard errors & covariance)

Dependent Variable	**Accountants and Auditors (Column-1)**	**Physicians and Surgeons (Column-2)**	**Civil, Electrical and Mechanical Engineers (Column-3)**
Constant	-0.0918*	-0.006	-0.134***
	(-1.912)	(-0.139)	(-4.729)
Per capita income (in $10,000)	0.007***	0.005***	0.007***
	(4.079)	(3.181)	(7.061)
Population (in million)	0.005***	0.004***	0.005***
	(3.435)	(3.545)	(5.559)
Border or Coastal State Dummy	0.0169	-0.004	0.029***
	(1.395)	(-0.245)	(2.867)
R1 – Restriction on Residency	**-0.0215****	**-0.007**	**0.021****
	(-1.934)	**(-0.868)**	**(2.103)**
R2 – Restriction at the time of Examination	**-0.0109**	**-0.024****	**-0.001**
	(-1.026)	**(-1.965)**	**(-0.059)**
R3 – Restriction at the time of License	**-0.057****	**-0.022**	**-0.023****
	(-2.043)	**(-1.335)**	**(-2.048)**
Civil Engineering Fixed Effects			-0.012
			(-1.173)
Mechanical Engineering Fixed Effects			0.007
			(0.578)
R-square	0.71	0.51	0.55
Mean of the dependent variable	8.04%	15.2%	10.8%

Note: The numbers in the bracket are t-statistics; ***,**,* denote statistically significant at 1,5 and 10 percent significant level respectively.

V. IMPLICATIONS OF THE CO-EXISTENCE OF QUOTAS AND REGULATORY REQUIREMENTS IN THE US MARKET

The fact that more foreign professionals want to come to the US than are admitted suggests that the binding constraint on their entry is not the regulatory requirements but the quantitative restrictions imposed by the US. These quantitative restrictions are implemented through the limitations on the number of specialty occupation visas (H1B) and the number of employment related Green cards. Given the binding quota, the number of foreign professionals in the US market is not affected by the regulatory requirements. Of course, if the US were to relax the quota, then the burdensome regulatory requirement could become the real deterrent to foreign entry.

The regulatory requirements do matter even now because the cost of complying with these requirements reduces the earnings of foreign professionals. In a sense, fulfilling these requirements leads to a financial transfer from foreign professionals: to the US Government, in the form of license fees or foregone incomes, e.g., for doctors obliged to work for a certain period at relatively low public sector salaries; to US training and educational institutions, in the form of fees for courses needed to re-

qualify in the US; or to pure waste where the measure is a frictional barrier, e.g. delays in granting a license which oblige foreign professionals to remain unemployed or to accept unskilled jobs.

It is possible to obtain a rough estimate of the financial cost of the regulatory burden on Indian professionals – noting, of course, that at least some of this burden may be necessary to remedy deficiencies in their education, training and experience. Thus, on average, every year over the period 1995-2000, 1092 Indian doctors entered the US medical system (Table 3). Each incurred a cost of $4,640 to obtain a visa, take the three steps of the professional examination and in licensing fee. Each had to go through a period or graduate medical education of between 3 to 6 years depending on the specialty and the state, irrespective of prior qualifications and experience. Then those on a J1 visa (most foreign doctors) were obliged to spend 3 years working in an underserved area at relatively low wages. Given that the average earnings of a doctor is shown by the census to be around $125,000, the earnings foregone by a foreign doctor are likely to be at least $100,000. The implication is that all the Indian professionals that entered in a particular year paid a regulatory tax of $114 million. Similar, conservative estimates suggest that the 10,000 or so Indian professionals that entered just the four professions that we are focusing on, paid a "regulatory tax" of around to $750 million.

This estimate needs to be qualified in several respects. At least some of the regulatory requirements may be justified by the need to ensure compliance with locally desired levels of competence. In fact, it is not just foreign professionals but also professionals from other US states who must in some cases fulfill regulatory requirements imposed by a particular US state. The heterogeneity of standards in a source country like India and the difficulty in observing true levels of professional competence, also lends legitimacy to at least some of the regulatory requirements.

Furthermore, the regulatory constraint is not always binding. In particular, the fragmentation of services facilitated by advances in information technology has made it possible to trade unregulated parts of services. In architecture, the preparation of basic plans and designs can be outsourced to individuals who have not been locally licensed, whereas conformity with local requirements and ultimate responsibility rests with the licensed professional. In legal services, research and documentation can be similarly outsourced, whereas representation in courts must be by a local firm. In accounting, bookkeeping can be outsourced, whereas conformity with local requirements and ultimate responsibility rests with the local professional. Thus, the market for "intermediate" services is increasingly contestable even though entry into the "final" stage is still affected by regulatory requirements.

How far can recourse to local "final" services help overcome regulatory barriers? To a large extent if these services are supplied efficiently and competitively. The efficiency condition relates to whether the host country actually has a comparative advantage in the production of final services. The competitiveness condition would be fulfilled if the host country imposed no unnecessary barriers to entry into the final stage. If either condition is violated, the regulatory obligation to use local final services creates an excessive wedge between international service providers and local consumers, potentially hurting both.

Table 3: Estimate of the financial costs of regulations (not accounting for necessary requirements)

Profession	Number of Indian professionals coming to the US annually (average for the 1995-2000 period)	Visa, examination and licensing fees paid per professional	Average income foregone per professional due to differential requirements	Total Income/ fees paid or lost by Indian professionals due to regulations (US$ in million)
	(A)	(B)	(C)	(D)
Physicians and Surgeons	1092	$4,640	$100,000	114
Civil and Mechanical Engineers	683	$2,270	$60,000	43
Accountants	518	$5,600	$30,000	18
Architects	350	$3,030	$25,000	10
Total for all professionals	10234	$60,000-$75,000		614-768

VI. PRIORITIES FOR INTERNATIONAL NEGOTIATIONS AND DOMESTIC REFORM

Since, as noted above, the binding constraint on the entry of foreign professionals into the United States are quantitative restrictions, implemented in particular through limitations on specialty occupation (H1B) visas, the highest priority in the negotiations for exporting countries must be to relax these quotas and to streamline visa issue procedures for professionals. As far as regulatory impediments faced by foreign professionals are concerned, the fundamental problem is the non-recognition of their qualifications, training and experience. All the other problems stem from this: the costly and time-consuming evaluation of prior qualifications, undertaking costly examinations, taking courses that at least in part repeat prior education, undergoing training that duplicates at least in part prior training, acquiring more experience than their US counterparts, with the added burden that all these requirements can in certain cases only be met in US locations, by obtaining US visas. In these circumstances, exporting countries' strategy must be:

- To secure as far as possible recognition for existing qualifications, training and experience.
- To ensure that any additional requirements can be fulfilled in the least burdensome manner.

A. Bilateral Approaches

All existing mutual recognition agreements in the world today are bilateral or concluded among a small group of countries. It is inconceivable that a forum with such diverse membership as the WTO could in the foreseeable future deliver meaningful mutual recognition agreements. How difficult it can be to achieve mutual recognition in professional services among a group of even relatively similar countries is demonstrated by the disappointing experience of the European Union. The most recent initiative could only be accepted once the critical "country of origin" principle, which would have implied full de facto mutual recognition, was weakened.

There is no doubt that ultimately liberalization depends on full recognition and that countries like India must continue to seek recognition from major trading partners in a bilateral context. But

past experience does not provide a basis for optimism for this approach. India's overtures in engineering (seeking membership of the Washington Accord), for example, have not met with success.[12] The key incentive problem is that foreign professionals have so far had limited interest in securing access to the Indian market, and have felt threatened in their own markets, because of the high level of competitiveness of Indian professionals. And the power of organized professional associations has so far trumped the benefits to diffuse consumer interests. But the situation may be changing. First, India's own economic growth and willingness to contemplate allowing greater access to the protected Indian market to foreign professional *firms* may have created greater commonality of interests. Increased incomes and increasing diversity of preferences may also create the possibility of foreign *professionals* serving some segments of the Indian market. Second, certain developments are leading to the mobilization of consumer interests within the United States. The increased demand for accountants in the wake of the Sarbanes-Oxley Act has induced the large accountancy firms lobby for more liberalized access to the US market. Similarly, the soaring cost of health-care has created an opportunity to mobilize hospitals and health maintenance organizations to lobby for increased trade in health care through all modes.

The second and more legitimate impediment to recognition is the heterogeneity of standards within India which has undermined the case for securing recognition on a national basis. In effect, poor quality institutions penalize the high quality institutions. India must certainly contest excessively burdensome regulations in the US market. But it must also reform its own regulations. Here it may well face a dilemma. Setting domestic standards at a level that enhances the case for foreign recognition may lead to standards that are inappropriately "high" from a domestic perspective. The tension will be greatest in areas like medicine where sections of the domestic market are underserved. In these circumstances, dual or multiple standards may be a solution. That is one standard is set at a level that creates a credible case for foreign recognition, and another at a level that is appropriate to domestic needs. This would eliminate the conflict arising from trying to meet two objectives with one standard. Furthermore, by accepting a lower standard, a segment of the population would receive the benefit of actual rather than notional service – because there is a lower probability of the provider emigrating abroad or to an urban area. At the same time, "export quality" standard(s) (assigned by examination or institution) can be targeted at specific export markets, and liberated from the need to be locally appropriate. The feasibility and desirability of such an approach, from both the political and regulatory perspective, and the design of domestic regulatory reform, must be a key area for future research.

B. Multilateral Approach

Given the difficulty of securing recognition bilaterally, parallel efforts need to be made in the current negotiations under the General Agreement on Trade in Services (GATS) to strengthen commitments and rules on trade in professional services. It is difficult to judge how fruitful such efforts will be given the reluctance of a number of influential WTO Members to assume much deeper disciplines on domestic regulations. Nevertheless, the following avenues are available:

[12] According to information obtained from the Indian Ministry of Commerce, the major professional bodies in India covering chartered accountants, doctors, dentists and architects have not entered into MRAs with their counterpart bodies in any other country. The major initiative in this field has been with Singapore bodies after the signing of the Comprehensive Economic Cooperation Agreement in 2006. Although the Singapore body of doctors has accorded recognition suo motu to medical degrees obtained from the All India Institute of Medical Sciences (AIIMS) and Christian Medical College (CMC), Vellore they have been reluctant to agree to a broader MRA. In the case of architects, dentists, nurses and accountants, discussions among the bodies of the two countries are still continuing. As mentioned above, India has provisional membership of the Washington Accord on engineering qualifications.

1. Leveraging mutual recognition agreements concluded by partner countries through the MFN principle.

2. Securing and enforcing national treatment commitments by trading partners.

3. Negotiating deeper disciplines on domestic regulations either under Article VI:4 of the GATS or in the form of additional commitments under Article XVIII of the GATS.

(a) *Leveraging mutual recognition agreements (MRAs) concluded by partner countries through the MFN principle.*

Even with no new multilateral commitments or rules, a country like India may still have an avenue to challenge restrictive regulations faced by its professionals by invoking the fundamental GATS provision of MFN (stipulating that a country may not discriminate between trading partners) as embodied in the GATS provision on recognition agreements (Article VII). This opportunity arises because some of its trading partners have already concluded mutual recognition agreements in professional services. For example, the US has made four notifications (required under Article VII.4 of the GATS): on accounting with Canada and Australia; on architecture with Canada; and the Washington Accord, on engineering with Australia, Canada, Hong Kong, Ireland, New Zealand, South Africa, and the United Kingdom.

However, a potentially serious difficulty arises because the MRAs have been concluded by entities (such as the American Institute of Certified Public Accountants (AICPA) and the Accreditation Board for Engineering and Technology (ABET)) that are neither Government entities nor do they seem to be exercising powers delegated by the Government, and may therefore escape GATS disciplines. Countries like India should, therefore, press for greater clarity in the applicability of Article VII to MRAs concluded by non-Governmental entities which have a de facto monopoly on accreditation.

Another potential difficulty is that mutual recognition of qualifications is also mentioned as an element of several regional integration agreements, notified under GATS Article V:7(a). These agreements include the one establishing the European Union, agreements between the European Union and neighboring countries, and the Closer Economic Relations Treaty between Australia and New Zealand. This raises the question of whether MRAs concluded in the context of a regional integration agreements are still subject to the disciplines in Article VII. One view may be that Article V provides an exception to the fundamental non-discrimination (MFN) obligation in Article II and therefore an exemption also to similar obligations contained in other GATS provisions, including Article VII. Alternatively, it could be argued that all MRAs, regardless of whether they are concluded by parties to a regional integration agreement or other Members, are covered by Article VII and its disciplines cannot be circumvented by appealing to Article V. It would seem to be in the interest of countries like India to push for the latter interpretation.

(b) *Securing and enforcing national treatment commitments by trading partners.*

The cornerstone of the multilateral trading system is the national treatment obligation, GATS Article XVII, which requires Members to offer no less favorable treatment to foreign services and service suppliers than that it accords to its own like services and service suppliers. In goods, under GATT 1994, national treatment is a general obligation allowing for no exceptions. In services, under the GATS, Members can choose whether to make such a commitment in a particular sector under a particular mode. None of the four large Members of the WTO, Canada, EU, Japan and US have made

commitments to guarantee national treatment under mode 4 (presence of natural persons) in any of the four professions being studied here. National treatment is potentially the most important guard against regulatory protectionism. If a country retains the right to discriminate, then negotiating an elaborate set of rules for domestic regulations would be like creating a building with no edifice. Hence, in addition to pushing for greater market access in professional services, the highest priority in the current negotiations would be to secure commitments from its main trading partners on national treatment.

But the application of national treatment to licensing and qualification requirements is not straightforward, and if Members are to be persuaded to make new commitments, and these commitments are to lead to a more predictable policy environment, then WTO Members need to agree on how the provision is to be interpreted. In order to see the difficulty, consider the hypothetical case of a medical doctor from X who arrives in Y with a view to practicing medicine there. To place the problem in a stark context, imagine that the Y licensing authorities ask him to re-qualify from scratch in order to have the right to practice. Would such a requirement be consistent with national treatment? The national treatment obligation requires that foreign services and service suppliers receive no less favorable treatment than the like national services and suppliers. If we apply the traditional GATT/WTO two-step approach of first establishing likeness and then determining whether "like" foreign suppliers are receiving less favorable treatment, then we end up in a legal cul-de-sac. If a doctor from X is deemed to be like a doctor from Y, then Y would not have the right to impose even a slightly greater burden on the X doctor. This position is hardly sustainable, and could with some justification be seen as a threat to regulatory autonomy. If, on the other hand, a doctor from X is deemed not to be like a Y doctor, the national treatment discipline simply does not apply, and the licensing authorities in X are given a free rein to do whatever they want. This is also an unsatisfactory outcome, as it may all too easily lead to the (deliberate) enactment of needlessly burdensome regulatory requirements and render the national treatment provision meaningless.

There is a solution to this problem which involves, on the one hand, accepting the right of regulators to pursue a legitimate objective, but on the other hand, ensuring that the objective is not pursued in a manner which unfairly discriminates against foreigners. In effect, the question of whether two services or service suppliers are treated differently must not be separated from how they are treated differently.

A two stage test can be suggested:

(i) Stipulate an a priori definition of like services based on similarity of end-uses, and a clear relationship of substitutability in consumption and direct competition, based on market conditions.

The criterion of end-uses serves to demarcate the class of services or service suppliers within which a particular measure may give rise to protection. For example, a higher regulatory burden on doctors than on accountants would clearly not arouse concern in the same way that a higher burden on accountants qualified in one country rather than another would. But, even within the class of similar end-use, a criterion is needed to distinguish between situations in which discriminatory effect is an incidental consequence of a domestic measure and those in which it is not.

(ii) If a Member takes measures that distinguish between what could be regarded as a priori like services or service suppliers, then that Member must demonstrate that any resultant unfavorable treatment of foreigners is necessary. In other words, that the Member could not have achieved the stated objective through any other reasonably available measure which did not disadvantage foreign services or foreign suppliers, or did not disadvantage them as much.

This approach represents a middle road between extreme intrusiveness and extreme permissiveness. It is based on the reasonable question: What is it that the Y licensing authorities really need to do to ensure that foreign doctors do not constitute a threat to the health of Y citizens? There are, in principle, a range of instruments which could achieve the objective of ensuring adequate quality of medical services. The best instrument would be one which achieved the objective of remedying the problem of asymmetric information about foreign suppliers' abilities at least cost: say through a comprehensive test of competence (possibly coupled with a brief period of internship). Even if Country X's doubts about foreign qualifications are accepted, the instrument chosen, full training in Y, modifies conditions of competition excessively even in the light of the objective, which could be attained through a less discriminatory instrument. Thus, any reasonable application of national treatment will unavoidably pose an excessiveness test in order to determine whether there is de facto discrimination. Note that this is quite different from imposing a "necessity test" on measures that are not discriminatory any way, an issue we address in the next section.

(c) *Negotiating deeper disciplines on domestic regulations either under Article VI:4 of the GATS or in the form of additional commitments under Article XVIII of the GATS.*

The Council for Trade in Services is currently in the process of negotiating horizontal disciplines on domestic regulations.[13] But these negotiations have so far made little progress, largely due to the reluctance of a number of countries to assume any further disciplines in this area. Chile, India, Mexico, Pakistan and Thailand have pushed for stronger rules, and made a submission on "Proposed Disciplines on Qualification Requirements and Procedures" (WTO, 1 May 2006). More recently, the Chairman of the Working Party on Domestic Regulation informally circulated Draft Disciplines on Domestic Regulation Pursuant to GATS Article VI:4 (18 April 2007). This draft and the overall political context suggest that the prospects for developing deep disciplines are dim. Nevertheless, given the nature of the regulatory impediments identified in the US market, and the reasonable presumption that foreign professionals face similar impediments in other markets, we would suggest building on existing and proposed disciplines in the following way.

- *A necessity test?*

First of all, it does not seem either feasible or desirable at this stage to create a new necessity test for non-discriminatory measures on the lines of the pilot disciplines for the accountancy sector.[14] First of all, de facto discriminatory measures probably account for a large proportion of trade-friction cases. The empirical significance of strictly non-discriminatory measures that impede trade more than they should has yet to be clearly established.

We conjecture that with regard to licensing and qualification *requirements*, a necessity test under VI:4 may go too far; with regard to licensing and qualification *procedures*, a necessity test may not go far enough. Note an important difference: under XVII, the excessiveness test described above would ask if the regulatory distinction between services or service suppliers was excessive; under VI:4, a necessity test would ask if the measure itself was necessary even though it did not discriminate in any way. Given that any protectionist effect of regulatory requirements will have already come under rigorous scrutiny under Article XVII, the institution of a necessity test for strictly non-discriminatory measures must be based on: (a) establishing empirically that strictly non-discriminatory requirements significantly impede trade, and (b) demonstrating credibly that such a test can be applied in a way that does not threaten legitimate regulatory autonomy.

[13] Cross-sectoral issues arising in designing disciplines for domestic regulations are discussed in Mattoo and Sauve (2003).
[14] See Gamberale and Mattoo (2002) and Trolliet and Hegarty (2003)

A deliberately far-fetched example helps to highlight some of the problems that could arise in applying a necessity test to non-discriminatory regulatory measures. Imagine that a WTO member required all taxi drivers to be certified cardiologists because it was socially unacceptable in that country for people to die of heart attacks while trapped in traffic jams. This would seem on the face of it an excessively burdensome regulatory requirement. It is, however, strictly non-discriminatory and so should WTO rules prohibit it? Surely such a prohibition would be considered unduly intrusive.

In the case of licensing and qualification procedures, as opposed to substantive requirements, there would seem to be less danger that the application of a necessity test is over-intrusive. Eliminating delays, cumbersome approval procedures and multiplicity of approving agencies is hardly likely to compromise the attainment of regulatory objectives. The problem is that while a necessity test provides a valuable chapeau, it may not on its own be an effective scourge of burdensome procedures. As in the case of a range of WTO agreements, such as the import licensing agreement, ensuring that procedures do not in themselves become an impediment to trade requires detailed and targeted procedural rules – of the kind that have been developed for the accountancy sector.

-Ensuring fairness and objectivity in both the evaluation of competence and the recommendations for remedial action

Note that the main problem in the US market is than none of the Indian degrees are technically recognized by the state boards as substantial equivalent to American degrees, and a lower or zero weight is attached to training and experience obtained outside the United States. Perceived deficiencies in general education must in some cases be addressed by either working for extra number of years or by taking other courses in the US. For each of the four professions studied here, all examinations, except the initial licensing examinations for doctors, are held inside the United States creating the need for foreign professionals to obtain visas and travel to the United States even thought all the examinations except the USMLE Clinical Skills test for Doctors are computer adaptive and can be held at international locations.

Building on the existing requirement under GATS Article VI:6 to institute procedures to verify the competence of foreign professionals, at least industrial country Members of the WTO should be required to justify the denial of recognition to foreign professionals on objective grounds and identify precisely why they are not deemed competent to practice. This task may be entrusted to the professional regulator or a special body created for the purpose. The key objective of this rule would be to enforce the suggested interpretation of national treatment presented above, in particular the second part of the proposed test, and place the burden of proof on the host country to justify the discriminatory treatment of a priori like service suppliers.

In so far as there are legitimate reasons to doubt the competence of a foreign provider, there would be a presumption in favor of a test of competence as a means of assessing compliance with local requirements. This would strengthen the principle articulated above in the context of national treatment that the least trade restrictive means be used to address perceived differences between national and foreign services providers. Where there are objectively verifiable gaps in education or training, then a foreign service supplier could be required to fill these gaps.

Re-qualification, and substantial repetition of training and experience should only be required if it can be demonstrated to be necessary to ensure the desired quality of a service. Similarly, local residency requirements should be no more burdensome than needed to ensure the desired quality of service and consumer protection. Finally, it should be possible to take any of these remedial actions, including examinations, filling gaps in education, training and experience in the home country of the

service provider unless it can be demonstrated that local fulfillment is necessary to ensure the quality of a service.

-*Other procedural disciplines*

Another problem in the US market is that each state has a different set of rules and the information regarding various licensure processes in different states is spread across the codes of respective state boards, the sites of the state boards, sites of the evaluator, sites of the testing agency, and sites of the respective colleges and various other associations and bodies.[15] Obtaining and compiling this information poses a challenge for an applicant. At least industrial country Members should set up a "one-stop website" for each profession where a foreign professional can obtain all the relevant information on licensing and qualification requirements and procedures.

Furthermore, for the purpose of licensure the State Boards ask the candidates to undertake evaluation of their Degrees. In many cases the procedures for evaluation are costly, time-consuming and nontransparent. Members would ensure that verification and assessment are carried out efficiently and transparently and the processes do not themselves constitute an unnecessary barrier to foreign professionals.

Quite apart from the difficulty of obtaining a visa to provide services in the United States (an issue that has been discussed in a previous policy note), the need to fulfill qualification and licensing requirements locally interacts with the restrictive visa regime to create a host of problems for foreign professionals. At least industrial countries should make it possible for examinations to be held in the home countries of foreign professionals or in countries that have less restrictive visa regimes than that of the United States. Where coming to the US is necessary, a candidate who needs to obtain a visa to fulfill a qualification or licensing requirement or both should be granted one. For doctors the restrictive J1 visa should be replaced by a more efficient and equitable visa, and the problem of providing medical services in underserved areas should be addressed through non-discriminatory measures.

The qualification and licensing procedures in each profession are costly. There is an even greater cost in terms of earnings foregone during the time that it takes a foreign professional to re-qualify. Members should ensure that fees charged are no higher than those necessary to cover the administrative costs of services, and the licensing process is no longer than that necessary to ensure the competence of foreign professionals.

[15] Article VII of the GATS on mutual recognition agreements and many preferential trade agreements allow variable geometry outcomes between foreign (unitary) countries and sub-national governments so as to deal with sub-national impediments to licensing. Thus the NAFTA foresees the possibility of an MRA between Mexican (nation-wide), Alberta and Iowa-licensed engineers or accountants. This is potentially a useful way to overcome variance in state-level licensing standards.

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ANNEX I

I.1 Regulations for Foreign Medical Professionals

1. *Documentary Evidence of Foreign Medical Degree***:** International graduates must show proof of having graduated from a medical college listed in the International Medical Education Directory (IMED).[16] There are 163 medical schools in India that are listed in IMED.

2. *USMLE (United States Medical Licensing Examination)* is a three-step examination for medical licensure in the United States. The USMLE assesses a physician's ability to apply knowledge, concepts, and principles that are important in health and disease and that constitute the basis of safe and effective patient care. Each of the three steps complements the others; no step can stand alone in the assessment of readiness for medical licensure.

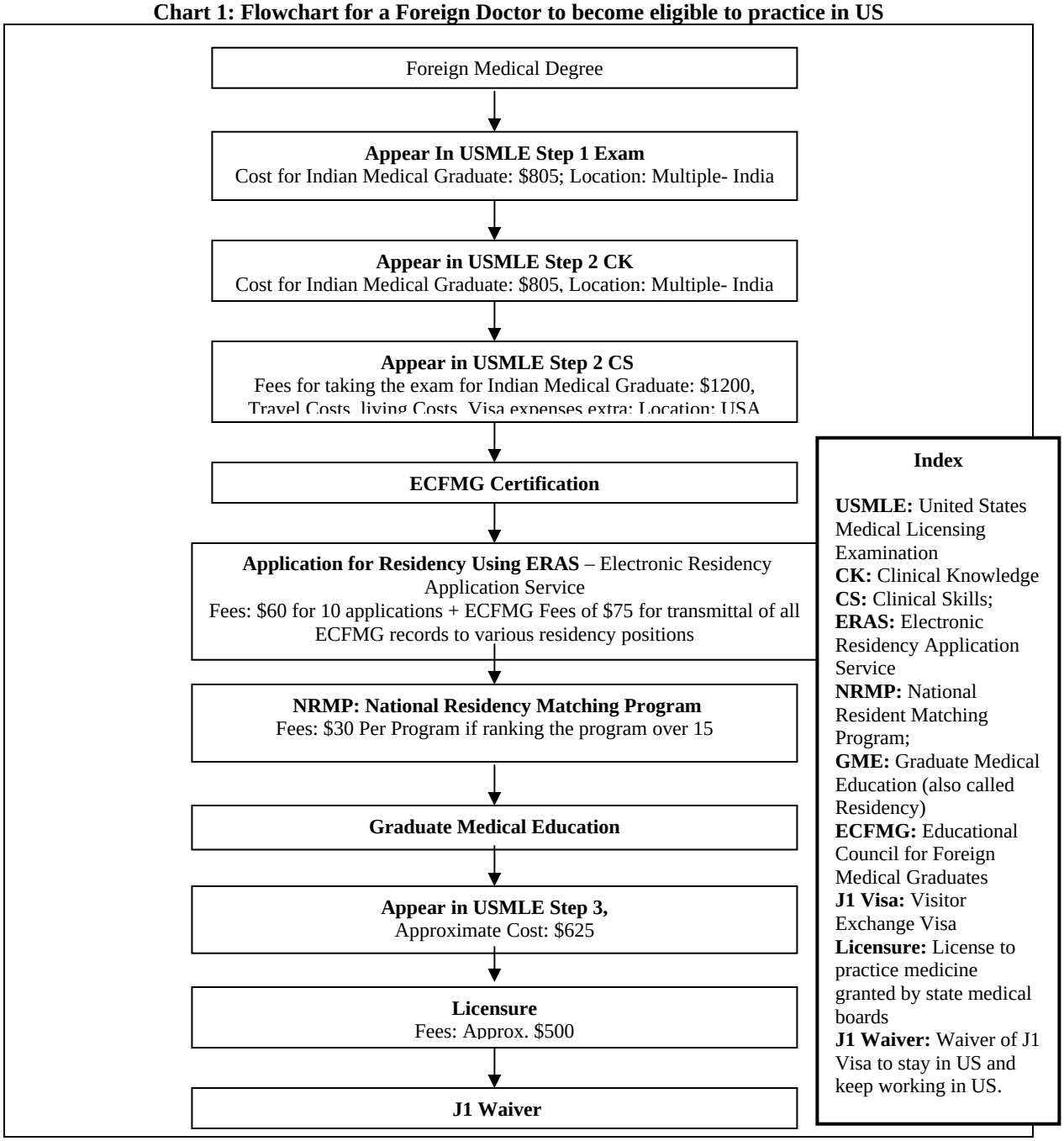
(i) *USMLE Step 1 Exam:* The Step 1 exam has approximately 350 multiple-choice test items, divided into seven 60-minute blocks, administered in one eight-hour testing session. The purpose of USMLE step 1 is to test the understanding and application of important concepts in basic biomedical sciences, with an emphasis on principles and mechanisms of health, disease, and modes of therapy. USMLE Step 1 is a one-day Computer-based Test. The exam is offered at Thomson Learning's Prometric testing centers at multiple locations in India. The fee for taking the examination is $ 685. Students from India have to pay an additional $120 of International Test Delivery Surcharge.

(ii) *USMLE Step 2 - Clinical Knowledge (CK): The USMLE Step 2* is broken into two sections. The first section is designed to test the knowledge of the clinical fundamentals needed for the practice of medicine and is known as "Clinical Knowledge" also USMLE Step 2 CK. Step 2 CK has approximately 370 multiple-choice test items, divided into eight 60-minute blocks, administered in one nine-hour testing session. This is also a computer based test and can be taken at Prometric testing Centers at Multiple locations in India. The fee for taking the examination is $ 685. Students from India have to pay an additional $120 of International Test Delivery Surcharge.

(iii) *USMLE Step 2- Clinical Skills (CS)*: The second section is known as USMLE Step 2 CS, also "Clinical Skills". This is a "live" exam in which the candidate has to examine 11 or 12 patient cases. The candidate has 15 minutes for each patient encounter and 10 minutes to record the patient note. The testing session is approximately eight hours. The goal of this part of the exam is to determine if the candidate has the basic skills in physical examination and history taking .This type of examination used to be limited to foreign medical graduates, but has been recently expanded so that all graduates must take the examination. Step 2 CS is administered at Clinical Skills Evaluation Centers in Atlanta, Chicago, Houston, Los Angeles, and Philadelphia. The fee for taking this test is $1200. Since the examination is held only in the US, foreign students need to obtain a US visa.

[16] A medical school is listed in IMED after the Foundation for Advancement of International Medical Education and Research (FAIMER) – a non-profit foundation of the Educational Commission for Foreign Medical Graduates – receives confirmation from the Ministry of Health or other appropriate agency that the medical school is recognized by the Ministry or other agency.

Chart 1: Flowchart for a Foreign Doctor to become eligible to practice in US



(iv) *ECFMG Certification***:** The first two steps of USMLE for international students and graduates are conducted by ECFMG- Educational Commission for foreign Medical Graduates. Through its program of certification, the Educational Commission for Foreign Medical Graduates (ECFMG) assesses the readiness of international medical graduates to enter residency or fellowship programs in the United States that are accredited by the ACGME-Accreditation Council for Graduate Medical Education. After clearing the first two steps of USMLE, an international Medical Graduate (IMG) is awarded ECFMG certification that is essential for an IMG to apply for fellowship or residentship positions. ECFMG certification allows a physician to work in a hospital in a training capacity or in a residency program with supervision.

(v) *Application for Residency Using ERAS:* The Electronic Residency Application Service (ERAS) is a service that transmits residency applications, letters of recommendation, Dean's Letters, transcripts, and other supporting credentials from applicants and medical schools to Fellowship, Osteopathic Internship and Residency programs using the Internet. The fee for ERAS is $60 for first ten applications. The fee increases proportionately with the number of applications.

(vi) *National Residency Matching program (NRMP):* NRMP is a program that matches applicants' and programs' preferences.

(vii) *Graduate Medical Education***:** This is also known as Residency and USMLE 1 & 2 exams are meant to test candidates to enter into GME in USA. The duration of residency depends on the specialty chosen. It varies from 3 years to 6 years across different US states. After a candidate has secured admission in a GME, he/she is sponsored by ECFMG on a J1 visa. In order to obtain the J1 visa, the candidate has to provide a statement of need from the Ministry of Health of the country of most recent legal permanent residence. Furthermore, the J1 visa mandates a candidate to return to his "country of last residence" after he completes his GME.

(viii) *USMLE Step 3:* This exam is administered by the medical board in each state. The exam is taken over the course of two days. One must complete each day of testing within 8 hours. The first day of testing includes approximately 350 multiple-choice questions divided into blocks of 25 to 50 questions that have to be completed within 30 to 60 minutes. There is a maximum of 7 hours of testing on the first day. The second day of testing includes approximately 150 multiple-choice questions and computer-based case simulations (CCS).The fee for the examination varies from state to state. The requirements for the foreign professionals differ from state to state. Many states require more years of GME from foreign trained students relative to US educated students before the former can appear in Step 3 of USMLE. For example in Washington DC, international medical graduates (IMGs) are required to do 2 more years of GME than their American/Canadian counterparts to qualify for taking the Step 3 USMLE.

(ix) *Licensure:* The state boards authorize a candidate to practice in that state after a candidate has cleared all the steps of USMLE and has also met all the requirements of the board. The "number of years of GME needed for Licensure" for the IMGS and the USMGs vary considerably across the states, with the average difference being approximately two years.

(x) *J1 Waiver***:** Since all the candidates sponsored by ECFMG enter US on J1 visa, they have to obtain a J1 waiver if they wish to stay in US and work. J1 waivers are awarded only if an Interested Government Agency (IGA) sponsors the candidate and the candidate agrees to work in Health professional Shortage area (HPSA) or in medically undeserved area (MUA) for a minimum period of three years.

I.2 Regulations for Foreign Engineering Professionals

Indian engineers enter the US labor market through one of two routes (flowchart 2):

(i) Engineers who have obtained their undergraduate degree from prestigious institutes like the Indian Institute of Engineers (IITs) or who have superior technical experience are found to enter the US on H-1B visa, since they are able to find US employers willingly to sponsor them for such a visa. If these engineers belong to an engineering field (e.g., civil or mechanical) where professional engineering (PE) is valued, then they have to gain few years of experience in the US before writing the Foundation of Engineering (FE) exam. Since no Indian degree is recognized as substantially

equivalent to ABET[17] accredited US engineering degree, almost all Indian engineers irrespective of the institution they received their engineering degree in India are required to earn several years of experience before they can write the PE examination. Thus, while US firms recognize the degree of these candidates and are willing to sponsor them for an H-1B visa, the state boards do not recognize their degrees as substantially equivalent to ABET.

(ii) Engineers who obtain their degree in less prestigious and well-known engineering schools in India are more likely to take admission into a graduate engineering program in the US and subsequently find an employer to sponsor them on an H-1B visa.[18] Those specializing in civil, mechanical, agricultural and geological engineering may go on to secure PE certification, as PE in these fields is necessary for further career progression and growth. According to the National Society of Professional Engineers, as much as 44 percent of civil engineers, 23 percent of mechanical engineers, 13 percent of agricultural engineers and 17 percent of geological engineers receive PE certification.

In the flow chart, Branch 1 depicts the path of candidates who have obtained their undergraduate engineering degree from prestigious engineering colleges such as IITs and arrive in the US directly on an H-1B visa sponsored by the employers. Discussions with Indian professionals indicated that these engineers tend to encounter fewer barriers than engineers graduating from lesser known institutes.

Branch 2 depicts the path of candidates have obtained their undergraduate degree from less well-known engineering colleges. These engineers tend to enroll in the MS (Master in Science) program in the US. There are some overlaps between Branch 1 and Brach 2 as some of the students from IITs also do MS in US to improve their job prospects.

i. **Graduate Records Examination**: Graduate Records Examination (GRE) measures critical thinking, analytical writing, verbal reasoning, and quantitative reasoning skills that have been acquired over a long period of time and that are not related to any specific field of study. The exam can be taken at multiple locations in India and costs approximately $160. The cost of preparation and time consumed vary from candidate to candidate.

ii. **Applications:** Applications are made to respective engineering schools in US. On interviewing a number of candidates we found that each generally applies to a minimum of ten schools in US and on that basis spends close to $1500 on applications, GRE score transmittal, sending the applications and finally appearing for the interview.

iii. **Acceptance:** Based on the performance in the GRE and various other considerations the candidate is offered admission.

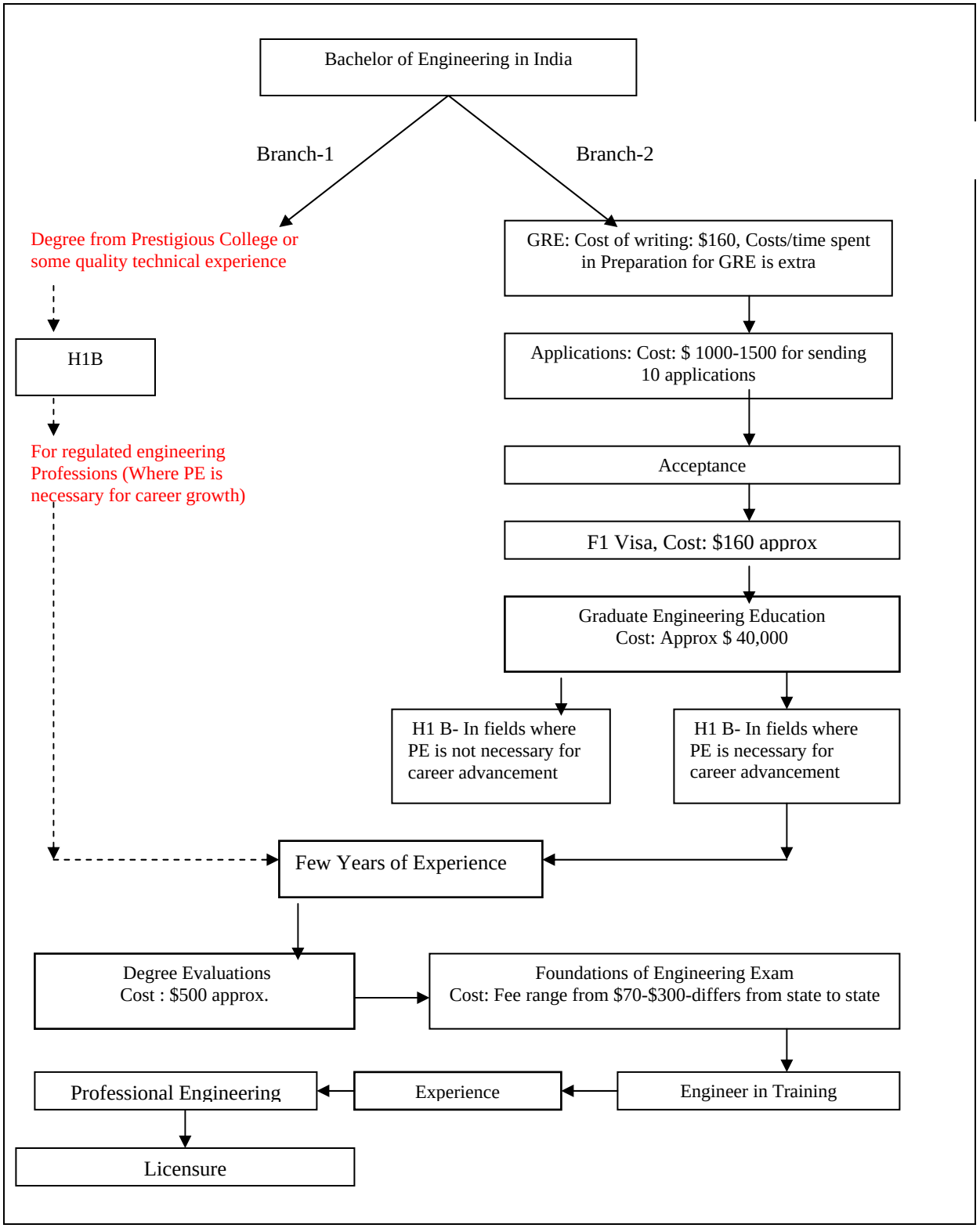
iv. **Visa:** After getting the admission letter and I-20 from the engineering school the candidate applies for a visa. Fees for the F1–student visa is approximately $160. The cost of preparing paperwork for the visa again varies from candidate to candidate.

[17] ABET, Inc., the recognized accreditor for college and university programs in applied science, computing, engineering, and technology, is a federation of 28 professional and technical societies representing these fields.

[18] Engineers who obtain their degree in some less prestigious engineering school but who arrive in US based on their long field experience. These kind of engineering professionals form very small percentage of population and therefore will not be covered for the purpose of this study.

v. **Graduate Engineering Education:** This is a two year Master of Science (MS) degree that a candidate undertakes. The tuition fees and cost of living differ significantly across various universities,

Chart 2: Flowchart for Foreign Engineers



with overall cost of education being higher for better known private universities than in public / state universities. Based on discussion with students, we estimate the average cost of acquiring an MS degree to be around $40,000--$7,000 tuition per semester and living expense of $500 per month for 24 months.

vi. **H-1B visa.** The students with electrical, chemical, industrial, electronics and computer engineering generally are hired by employers and are sponsored on an H-1B visa.

vii. **Pursue PE Certification.** The students with civil, mechanical, agricultural and geological engineering degree generally start working on H-1B visa, but after gaining some experience, many of them pursue the PE certification.

viii. **Experience:** Many US states require that a candidate who has not completed her undergraduate engineering degree from an ABET accredited program undertakes a few years of additional experience in the US, in some cases the experience has to be earned within the state, before they can take the FE exam.

ix. **Degree Evaluations:** The candidates who have obtained their degrees in an engineering school that are not ABET accredited have to get their degrees evaluated. Some state boards require the degrees to be evaluated before a candidate writes FE exam and some other boards require evaluation to be done after a candidate has written the FE exam. The cost of the evaluation is approximately $500.

x. **Fundamentals of Engineering Exam:** The first examination in the licensure procedure is the Fundamentals of Engineering (FE). This exam is offered in April and October every year. The FE exam is a national examination and is constructed by National Council of Examiners for Engineering and Surveying (NCEES). Even though the examination is national, each state still administers its own licensing process. Therefore, rules and procedures (for example, who can take the examination, experience requirements etc.) vary from state to state:

- The examination centers are located only in the state in which a student wants to practice engineering.

- Many state boards have engaged professional credential services (PCS) for application processing, examination administration and score reporting of the engineering examinations and many others undertake these functions themselves.

- The examination fee differs from state to state.

- Content of the examination: Each examination is 8 hours long, with one 4-hour session in the morning and another in the afternoon. Examinees must participate in both sessions on the same day. Both exams are closed book, and reference material is supplied. The examination consists of 180 multiple-choice questions. During the morning session, all examinees take a general examination common to all disciplines. During the afternoon session, examinees can opt to take a general exam or a discipline-specific (chemical, civil, electrical, environmental, industrial, or mechanical) exam.

- In many states, candidates who have done their undergraduate degree from foreign engineering schools not accredited by the ABET are required to obtain practical experience before they write FE.

xi. **Steps in taking the examination**: (a) Application is made to the respective state board in the format prescribed by the board; (b) Approval has to be obtained from the board regarding the fulfillment of eligibility condition for taking the exam; and (c) In some states, the board itself conducts the examination that is constructed by NCEES, and in other cases, the board hires an outside agency to conduct the examination. In the latter, after getting the approval from the board an applicant applies to the designated agency to obtain an appointment to sit in the test.

xii. **Engineer in Training:** Once a candidate passes the exam, he is known as Engineering Intern (EI) or Engineer-in-Training (EIT).

xiii. **Experience:** The requirement of work experience differs from state to state. Generally four years of qualifying experience is required after a candidate has taken the FE exam. If the candidate is not a graduate of an accredited four-year engineering program (which most Indian engineers are not), she is required to acquire four years of qualifying experience (often 8-12 years depending on the nature of the candidate's education) to be eligible for engineering licensure. In order to constitute qualifying experience, the experience must meet the following criteria:

a. First, the experience should be in a major branch of engineering in which the candidate claims proficiency.
b. Second, the experience must be supervised. That is, it must take place under the ultimate responsibility of one or more qualified engineers.
c. Third, the experience must be of a high quality, requiring the candidate to develop technical skill and initiative in the application of engineering principles and sound judgment in reviewing such applications by others. The experience must be of a nature that the candidate develops the capacity to assume professional responsibility for engineering work.
d. Fourth, the experience must be broad enough in scope to provide the candidate with a reasonably well-rounded exposure to many facets of professional engineering. Along with highly specialized skill in a particular branch of engineering, the candidate should acquire an acceptable level of competence in his or her basic engineering field, as well as the accessory skills necessary for adequate performance as a professional.
e. Finally, the experience must progress from relatively simple tasks with less responsibility to work of greater complexity involving higher levels of responsibility. As the level of complexity and responsibility increases, the candidate should show evidence of increasing interest in broader engineering questions and continuing effort toward further professional development and advancement.

ix. In assessing whether the candidate is sufficiently competent and responsible to be entrusted with, or independently engage in engineering work, or to supervise engineering work, the state engineering licensure boards look for evidence of independent decision-making and assumption of personal accountability in design and application.

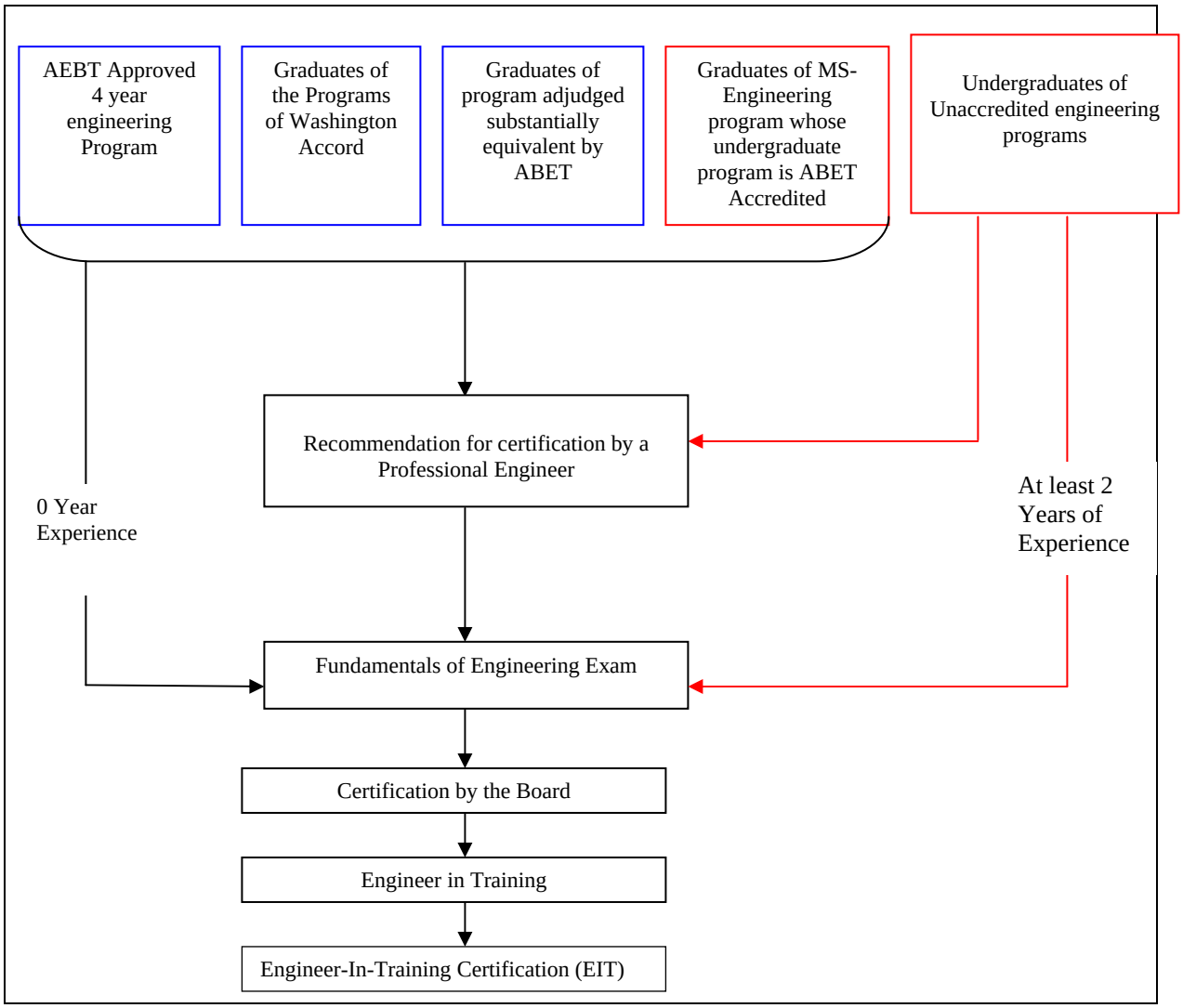
x. **Professional Engineering Exam (PE):** This is the final step of the Professional Licensure and broadly has four requirements:

a. References: Applicant is generally required to be recommended by at least five persons out of whom three must be Professional Engineers (PE) who have personal knowledge of applicant’s experience, character and ability.
b. Qualifying experience: The applicant should have requisite qualifying experience as an engineering intern.

c. FE exam: The applicant should have cleared the FE examination.

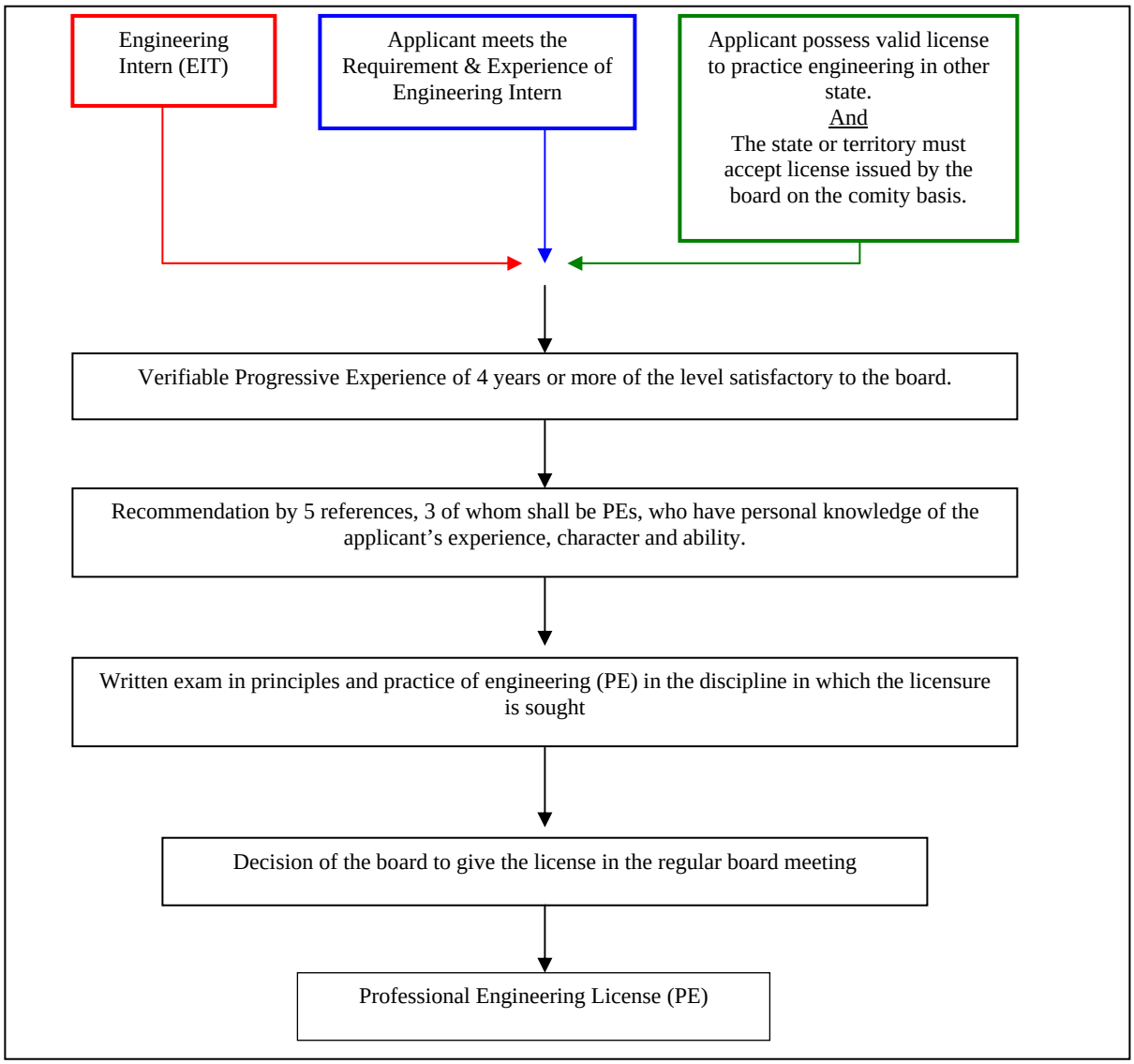
d. A candidate from an ABET accredited program is required to have four years of quality experience. Many states require a larger number of years of experience for a candidate who has done his/her undergraduate engineering degree from a non-accredited program, e.g. Pennsylvania requires at least 12 years of quality experience.

Chart 3: Process of Engineer in Training (EIT) Certification



xi. Applicant then has to pass the written exam in principles and practice of engineering (PE) in the discipline in which the licensure is sought. The exam is constructed by NCEES and administered by state boards. The procedure of the application is as follows: (a) Application to the Board in the required application format; (b) Approval obtained from the board regarding the eligibility to take the exam; (c) In some states, the board itself conducts the examination that is constructed by NCEES and in other cases the board hires an outside agency to conduct the examination. In the latter case after getting the approval from the board an applicant applies to the designated agency to obtain an appointment to sit the test; (d) The examination is generally conducted in the same state where an applicant wants to practice.

Chart 4: Professional Engineer Licensure Process



I.3 Regulations for Foreign Architecture Professionals

"In the United States, the right to practice architecture and the right to use the title "architect" are only granted by state registration boards. The National Council of Architectural Registration Boards is the national agency representing those state boards and works with its member boards to establish registration or licensing policies".[19]

(i) Employed by US based architect firm on H1 Visa: Only way to come directly from a foreign nation and work in architect field in US is to get employment sponsorship from a US based architect firm. Once a professional gets an HI visa, he/she can work in US however, they are not authorized to sign the documents without an architect license in that particular jurisdiction. This limitation also applies to US nationals.

[19] http://ncarb.org/forms/regulation.pdf

(i') Masters in Architecture from US: Getting an H1 visa sponsorship from a US employer is very difficult in the architecture field, therefore, most foreign candidates choose a different route to come to the US for architecture[20]. They obtain a Masters in Architecture degree from a US university, which takes around 2 years and costs approximately $40-$70K.

(ii) Work for US employer on Optional Practical Training/ H1 Visa: After obtaining a Masters degree from a US university, a foreign professional can work in the US for one year in optional practical training and can also obtain employment sponsorship from a US employer.

(ii') Positive Evaluation by EESA- NAAB[21] - $900: If a professional who came directly from a foreign nation on H1 visa wishes to practice architecture in the US, he/she has to obtain a license in the particular state in which he/she wishes to practice. All foreign-educated architects[22] need to have all of their post-secondary education evaluated through the Education Evaluation Services for Architects (EESA) of the NAAB.[23] The evaluation fee for the EESA is $900 with additional fees of $ 200 for re-consideration (evaluation of any additional materials that have not previously been submitted). The evaluation process takes a minimum of five months after submission of the completed application form and all requested documentation. After the evaluation, if there are any deficiencies, then those gaps have to be filled by taking additional course work in US.[24]

(iii) Intern Development Program (IDP) Training Cost: $285 – NCARB fees: Intern Development Program (IDP) is run by NCARB[25]. IDP specifications of requirements are accepted by almost all states for the purpose of eligibility to take ARE. IDP specifies that a candidate undertake 700 training units. One Training Unit is equal to eight hours of acceptable activity in an acceptable work setting. Therefore 700 units are equal to 5600 training hours.

Counting Foreign Experience towards IDP Requirement*:* No more than 235 Training Units may be earned in a firm engaged in the practice outside the US or Canada. These credits may be earned provided the candidate is working under the direct supervision of a person practicing architecture who is neither registered in any jurisdiction in USA nor in a Canadian Jurisdiction. Every training activity, the setting in which it took place, and the time devoted to that activity must be verifiable and should be verified by an architect who supervised that activity.

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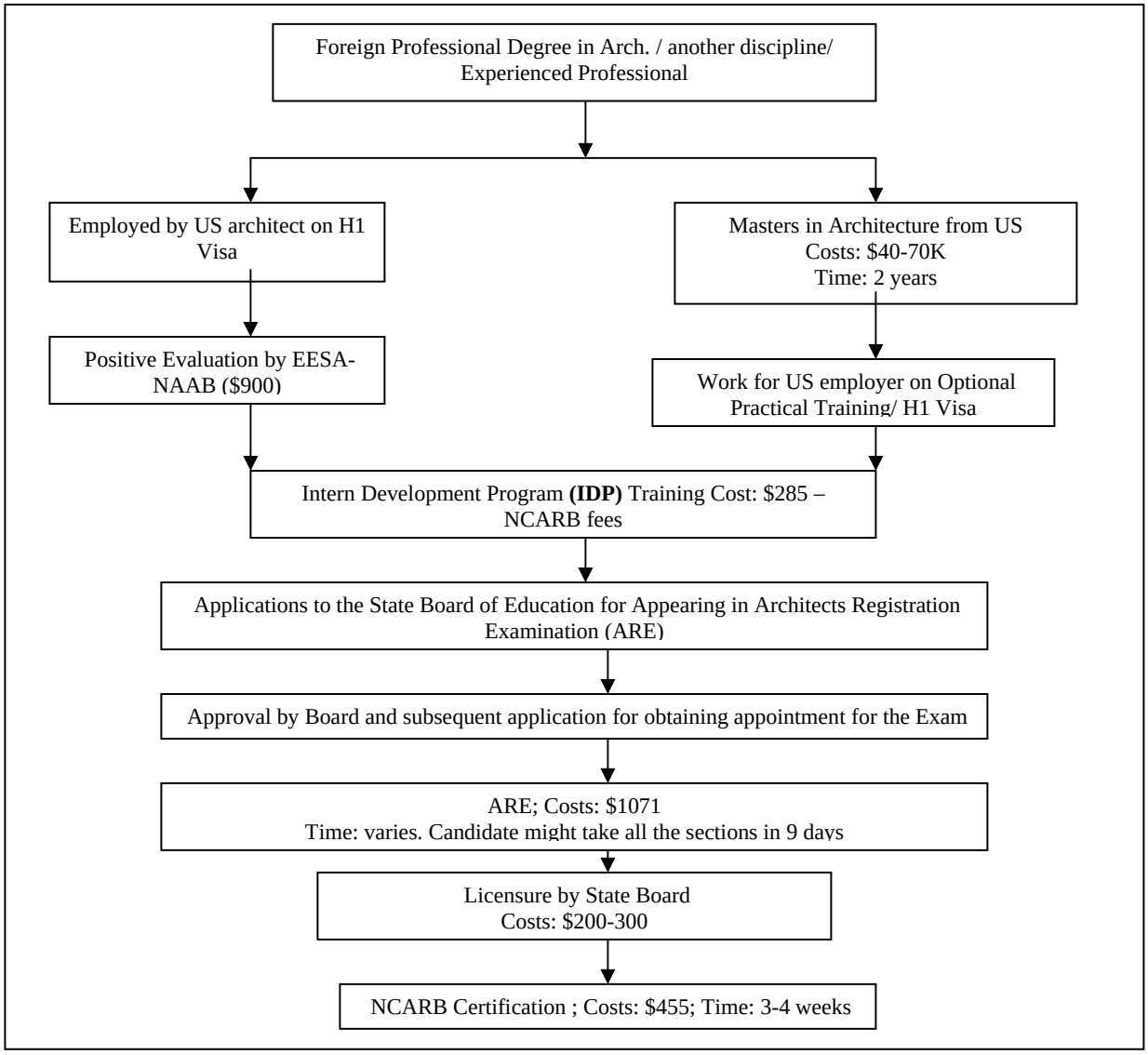
[20] Interviewed 4 Indian professionals who are working in architecture field in US

[21] Education Evaluation Services for Architects (EESA) of the NAAB.

[22] In June 1999, Barcelona Accord was adopted by the Union of International Architects (UIA) to define best practice for the architectural profession and the standards in order to make it easier for different nations to negotiate mutual recognition and/or free trade agreements allowing portability of architectural credentials and/or services (http://www.aia.org/SiteObjects/files/PracticeinaHostNation.pdf). The UIA has members in over 100 countries in 5 regions of the world and include India. However, the Accord is voluntary and not an agreement with architectural boards of states and countries. The US National Council of Architectural Boards (NCARB) has signed an agreement with the Committee of Canadian Architectural Councils (CCAC) that provides for the reciprocal registration of architects in US and Canada. Most jurisdictions in US and Canada have signed a Letter of Undertaking which provides for the acceptance of the conditions of the NCARB/CCAC.

[23] For the purpose of evaluation, EESA requires a total of 160 semester hours of study out of which 40 semester credit hours are required in English, Humanities, Mathematics, Natural Sciences, and Social Studies. Indian Students typically undertake all these modules in school before entering the professional course. But as these modules are not taught in the professional courses, knowledge of these modules is not recognized by the evaluation agency.

Chart 5: Architects Flowchart



(iv) Applications to the State Board of Education for Appearing in Architects Registration Examination (ARE): Every state member board requires architects to pass NCARB's Architect Registration Examination (ARE). Candidates have to register in a specific state board to take the exam. The ARE consists of nine divisions—six multiple-choice divisions and three graphic divisions. All divisions of the examination do not need to be taken at the same time. After completing IDP requirement, the candidate applies to particular state board in which he/she wants to practice architecture. The board evaluates the candidate's experience and education credentials. Even though IDP requirements are uniform across different states, requirement differs in terms of education/ experience credits for example, Also California allow a candidate to apply for ARE exam before completing IDP requirements, however states such as New York, Maryland does not approve ARE application before IDP requirements have been fulfilled.

(v) Architects Registration Examination – Costs: $1071: Once the application is approved from the state board, the candidate takes the ARE exam.

(vi) Licensure by state board: State boards have additional experience requirements for architect license. After successful completion of ARE and fulfilling all other requirements, candidate gets the license to practice in that state

(vii) NCARB Certificate: After getting license from the state board, he/she can obtain NCARB certificate. While this is optional, the NCARB certificate helps in reciprocity among different states.

I.4 Regulations for Foreign Accountancy Professionals

The accounting profession is regulated by 54 State Boards of Accountancy, the American Institute of Certified Public Accountants (AICPA) and the 54 state societies of Certified Public Accountants (CPA). The State Boards of Accountancy are agencies of state governments and laws for accounting practice differs across different states in terms of requirement of experience, education for practicing accountancy in respective states. Following paragraphs discuss the process followed by foreign professionals for CPA examination (flowchart 6).

(i) Evaluation of Education Credential: Candidates evaluate his/her education credentials via board approved credential services. The costs varies from $100-$200. The evaluation process may take up to 3-4 weeks depending upon the evaluation service provider and applicants credentials.

(ii) Application to Board for CPA Exam: Once the foreign education is evaluated via credential services, he/she submits an application to the Board of Examiners for evaluation and to be authorized to take one to four different parts of the CPA exam. Some states require 150 semester university hours and some local CPA certified experience (1-2 yrs). The Uniform CPA Examination is the examination that individuals must pass in order to qualify for licensure as Certified Public Accountants in any of the 55 U.S. jurisdictions (the 50 states, the District of Columbia, Puerto Rico, U.S. Virgin Islands, Guam, and the Commonwealth of Northern Mariana Islands). The scope of the exam includes four areas: auditing and attestation, business environments & concepts, financial accounting & reporting and regulation. It may make up to 4-8 weeks (depends on state board) and evaluation costs is $100 (depends on the board).
(iii) Once eligibility to take the examination is determined, an approval letter is sent to the candidate. One to two days later, an **Authorization to Test** (ATT) is sent to the National Candidate Database maintained by NASBA (National Association of State Boards of Accountancy). The Authorization To Test is valid for 90 days: candidates must pay examination fees to NASBA within 90 days of the date of issue of the ATT. Fee depends on the how many exams candidates wants to appear for. Since foreign candidates from India have to travel to USA for exam, they usually attempt all the exams in one sitting. Combined fees for all four sections are approximately $500-$800 depending on the board.

(iv) Once board approves the application, the candidate prepares for the CPA exam via self study or review course. This might take up to 6 months depending on candidate capability. These review courses may cost in range of Rs. 50000-100000.

(v) After NASBA receives the Board's Authorization To Test, NASBA sends a payment coupon to the candidate via email or US mail (as specified by the candidate) to request additional fees for grading, computer test (seat) time, digital photo at the test center and their processing fee. That payment coupon will state the amount of examination fees to be paid by the candidate and method of payment based upon the sections the candidate has been authorized to take. Candidate will be required to pay the full amount for all parts approved in the Authorization to Test.
(vi) Once a candidate receives the ATT, the candidate applies for US visitor visa.

(vii) Within the 90 day period after candidate receives ATT, he/she makes payment to NASBA. Once correct fees are received from the candidate, NASBA issues a Notice to Schedule. (NTS) to the candidate and also informs the Board of Examiners. The candidate is instructed to contact the Prometric Testing Center to schedule a day and time for testing for each section. The NTS is valid for six months from the date of issue. This means that the candidate must schedule and take all sections that were authorized within six months of the NTS issue date.

(viii) Once Visa is approved, candidate travels to US to appear for exam. The cost of travel ranges from $900-$1300. There are some additional lodging expenses which depend on the candidate.

(ix) If candidate passes the exam, he/she gets the score but may or may not get the certificate (depends on state board). If the CPA licensing structure is two-tier, candidate will receive the certificate otherwise not. If the candidate fails any of the sections, he/she would have to reappear for the respective section and pay the additional fees.

(x) Licensure for CPA Practice. After passing the CPA exam, the professional has to apply for CPA license in order to practice accountancy in US. Candidate applies for licensure by sending an application to the particular state board with all the necessary documentation including transcripts, experience documentation, etc. Candidate might also have to take additional examinations, such as an Ethics exam. As many as 16 states like Nebraska require in-state residency or office for licensure. In some states such as Alabama the requirement is citizenship. Application fee for license is approximately $300 depending upon the state board. Once all the requirements are met, applicant is issued a license to practice in respective state. The process may take up to 14 weeks after submitting the application.

Chart 6: Flowchart for a Foreign Accountant to become eligible to practice in the US